

REMARKS

The present Amendment amends claims 1, 3-11, 14-17 and 20 and leaves claim 18 unchanged. Therefore, the present application has pending claims 1-11, 14-18 and 20.

Claim 1 stands objected to due to informalities noted by the Examiner in paragraph 2 of the Office Action. Amendments were made to claim 1 to overcome the objections noted by the Examiner. Therefore, this objection is overcome and should be withdrawn.

Claim 5 stands rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention. Various amendments were made throughout claim 5 to bring it into conformity with the requirements of 35 USC §112, second paragraph. Therefore, Applicants submit that this rejection is overcome and should be withdrawn.

Specifically, amendments were made to claim 5 to overcome the objections noted by the Examiner in paragraph 4 of the Office Action.

Claims 1-3, 15-17 and 20 stand rejected under 35 USC §103(a) as being unpatentable over Ram (U.S. Patent No. 5,941,969) in view of Riedel (article entitled "Active Disk-Remote Execution for Network-Attached Storage"); claim 14 stands rejected under 35 USC §103(a) as being unpatentable over Riedel and Kanai (U.S. Patent No. 5,862,403); claims 4, 5, and 18 stand rejected under 35 USC §103(a) as being unpatentable over Ram, Riedel and Deinhart (U.S. Patent No. 5,911,143); claims 7-11 stand rejected under 35 USC §103(a) as being unpatentable over Ram,

Riedel and Dello (U.S. Patent No. 6,363,499); and claim 6 stands rejected under 35 USC §103(a) as being unpatentable over Ram, Riedel and Deinhart and Fong (U.S. Patent No. 6,292,879). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims are not taught or suggested by Ram, Riedel, Kanai, Deinhart, Dello and Fong whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to each of the claims so as to more clearly describe features of the present invention. Particularly, amendments were made to each of the independent claims so as to more clearly recite that the present invention is directed to a disk unit, a method of controlling a disk unit and a client server system. Particularly, as per the present invention, the disk unit is connectable to a server computer and a client computer via a network, wherein the server computer manages a plurality of function programs that the client computer request to execute and manages data stored in the disk unit. As per the present invention, the disk unit includes a disk storage media for storing data and a control unit which includes a memory for storing the function programs and function information relating to the function programs.

The control unit receives one of the function programs from the server computer and stores the received function program in the memory and receives a function execution request, which is sent from the client computer to the server computer to request execution of one of the function programs, from the server the

computer, selects the requested function program from the memory, selects the function information in connection with the selected function program and executes the selected function program in condition described into the selected function information.

Further, the control unit examines, based on a selected function information, whether an access from external of the disk unit to the data stored in the disk storage media is allowable and restricts accesses to the data stored in a disk storage media from external of the disk unit to the data stored in the disk storage media during execution of the selected function program.

According to the present invention, when the host computer receives a request from the client computer to execution one of a plurality of function programs, the host computer sends an instruction to the storage unit to execute the one function program as per function information which define the execution condition of the function program. Before receiving the instruction from the host computer the storage unit receives some of the function programs from the host computer and stores these function programs into a memory. When receiving the instruction, the storage unit selects the instructed function program from the memory and executes the instructed function program under limited circumstances defined by the function information sent by the host computer.

Thus, according to the present invention, the load of execution of any one or more of the function programs by the host computer is reduced since the execution of the function program is performed by the storage unit. The above described features of the present invention as now more clearly recited in the claims are not

taught or suggested by any of the other references of record whether taken individually or in combination with each other.

The above described features of the present invention are not taught or suggested by the primary references utilized by the Examiner to reject the claims, namely Ram and Riedel.

Ram teaches a bridge for direct data storage device access wherein a file server has one or more function specific processors including network processors and file storage processors all operating in parallel and communicating over an interconnection bus with data storage devices. However, at no point is there any teaching or suggestion Ram that the data storage devices themselves perform the functions. The functions in Ram are only performed by the file server not the storage devices as now recited in the claims.

The above noted deficiencies of Ram are not supplied by Riedel. Therefore, the combination of Ram and Riedel still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Particularly, Riedel discloses the use of active disk in the remote execution for network attached storages. As per Riedel, the active disk can execute function programs indicated by a client computer. However, Riedel does not teach or suggest how a storage unit sends the function program to the storage device and registers the function program into the storage device and also that the function program is executed according to the function information as in the present invention. Thus, it is quite clear that Riedel suffers from the same deficiencies relative to the features of the present invention as Ram.

The above noted deficiencies of Riedel and Ram are also not supplied by Kanai, Deinhart, Dello and Fong. Therefore, combining the teachings of Ram and Riedel with any one or more of Kanai, Deinhart, Dello or Fong in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Therefore, reconsideration and withdrawal of the above described rejections of the claims under 35 USC §103(a) based on anyone or more of Ram, Riedel, Kanai, Deinhart, Dello and Fong still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-11, 14-18 and 20.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-11, 14-18 and 20 are in condition for allowance. Accordingly, early allowance of claims 1-11, 14-18 and 20 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (501.38590X00).

Respectfully submitted,

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